

ADDRESSING ASTHMA IN MISSOURI

2005

MISSOURI ASTHMA COALITION

Addressing Asthma in Missouri

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LIST OF ABBREVIATIONS

BRFSS	Behavioral Risk Factor Surveillance System
CDC.....	Centers for Disease Control and Prevention
ED	Emergency Department
HP 2010	Healthy People 2010
MAC.....	Missouri Asthma Coalition
MAPCP	Missouri Asthma Prevention and Control Program
MDHSS.....	Missouri Department of Health and Senior Services

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TABLE OF CONTENTS

2	Executive Summary
3	Background
4	Asthma in Missouri
10	The Missouri Asthma Coalition
12	Community Objectives
16	Health Care Objectives
20	Environmental Health and Work-Related Asthma Objectives
22	Scientific Objectives
26	Policy Objectives
27	References

Nearly 500,000 Missourians live with asthma. Each year, nearly 100 Missourians die due to asthma.

ASTHMA IS MORE COMMON among women (14.0%) than men (10.9%), and among African Americans (16.5%) than Whites (11.6%)¹. Based on emergency department (ED) and hospital data, children are disproportionately affected. About 1 in 10 African American households have at least one child with asthma, compared to 1 in 15 White households. Asthma-related hospitalization charges alone total over \$50 million each year in Missouri².

Much of this cost is avoidable. Although there is no cure, asthma can be controlled with proper medical management and avoidance of certain factors and behaviors. People with poorly managed asthma suffer from: lower quality of life, reduced activity, missed days of work or school, frequent ED visits or hospitalizations, and – although rare – death may occur^{3, 4}.

Because asthma can be controlled, a statewide comprehensive public health approach is likely to have significant impact on morbidity and mortality⁵. With an alarming rate of increase in asthma⁶, it is crucial that actions are taken to address the asthma issue in Missouri.

The Missouri Asthma Prevention and Control Program (MAPCP) was formed with support from a Centers for Disease Control and Prevention (CDC) grant awarded in 2001. A multidisciplinary group of representatives from government agencies, schools, workplaces, nonprofit organizations, the health care industry, and universities joined to create the Missouri Asthma Coalition (MAC) to address the asthma issue.

Missouri Asthma Coalition goals, based on objectives outlined in Healthy People 2010⁷:

Reduce asthma deaths

Reduce hospital ED visits due to asthma

Reduce hospitalizations due to asthma

Reduce the number of school days missed due to asthma

Reduce the number of work days missed due to asthma

Reduce activity limitations due to asthma

Reduce disparities in asthma outcomes among Missourians for all goals listed above

In order to advance these objectives, the MAC is proud to present the state plan *Addressing Asthma in Missouri*.

Asthma-related hospitalization charges alone total over
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The plan directs efforts toward people with asthma, their families, health care providers, employers, policymakers, and communities to control asthma in homes, schools, workplaces, and the community at-large. Surveillance will continue to be a priority; data collected will be used to measure, monitor, and improve plan effectiveness. The main goal of the state plan is to reduce the impact of asthma in Missouri by

improving the quality of life for those with asthma and decreasing direct and indirect economic losses for all Missourians.

It's all too easy to read about a health problem and forget that it's a real disease affecting real people. Throughout this state plan, follow the story of Kevin, an 8-year-old boy recently diagnosed with asthma. Although fictional, Kevin's story is typical of many children in Missouri living with asthma.

Ever since he was a baby, Kevin seemed to get sick more than other kids his age. By the time he was three he had bronchitis, pneumonia, and a cough that never seemed to go away. His parents took him to see the pediatrician whenever he was sick, but she assured them that there was no reason to worry. She said Kevin was exposed to a lot of new germs in child care and that it wasn't uncommon for him to have recurring respiratory problems.

Around the time Kevin started kindergarten his father lost his job and the family no longer had health insurance. Although they signed up for Medicaid, Kevin's pediatrician didn't accept it. The family started using the emergency room whenever Kevin needed to see a doctor. As a result, Kevin saw a different doctor each time he was sick and no one noticed that his respiratory symptoms were part of a larger problem.

One night, Kevin woke his parents up in the middle of the night. It was hard to breathe and he was scared. The family rushed to the emergency room, where Kevin was given a breathing treatment to help him breathe better. An observant doctor noticed that Kevin had been seen several times before for respiratory problems. He referred them to an asthma specialist who accepted Medicaid about an hour away, and even wrote down the address and phone number for them.

Continue reading Addressing Asthma in Missouri to see how Kevin's asthma management is impacted by the actions of his caregivers, school, and state government.

ASTHMA IS A SERIOUS chronic disease whose cause is unknown. However, factors that contribute to asthma-related illness are well documented. This means that while there is no cure for asthma, it can be treated and controlled. Possible consequences for those with poorly managed asthma are lower quality of life, reduced activity, missed days of work or school, frequent ED visits or hospitalizations, and in rare cases, death^{3,4}.

Asthma is a major public health problem in Missouri. Nearly 500,000 Missourians live with asthma and nearly 100 die due to asthma complications each year. The rate of asthma is on the rise, with 12.5% of adults diagnosed in 2002 compared to only 10.6% in 2000. ED and hospitalization data show that children are disproportionately affected by asthma. Sex and racial/ethnic disparities also exist. Asthma-related hospitalization charges total over \$50 million every year².

It is important to note that public health interventions aimed at people with asthma, their families, health care providers, and communities are likely to significantly impact asthma outcomes because the disease can be controlled^{3,4,5}. For this reason, along with the seriousness and costs associated with the disease, asthma needs to be a public health priority in Missouri.



Healthy People 2010 Objectives

THERE ARE CURRENT DATA for Missouri on asthma deaths, emergency department (ED) visits, and hospitalizations. Table 1 compares Missouri's baseline rates to the national baseline rates and the Healthy People 2010 target objectives⁷. The Missouri Asthma Coalition (MAC) seeks to progress toward meeting the HP 2010 objectives related to deaths, ED visits, and hospitalizations. If an HP 2010 objective has already been met the MAC seeks to continue to improve the outcome.

According to available figures from 2001, asthma-related death rates in Missouri exceed both the national baseline and HP 2010 objective rates for people aged 15 to 34 years. Missouri's death rate is below the national average and HP 2010 objective for adults 35 and older. The ED visit rate for children under age 5 is above the national and HP 2010 rate. Missouri's ED visit rate for people aged 5 to 64 years is below the national average but above the HP 2010 objective. The ED visit rate in Missouri for adults 65 years and older is below both the national average and HP 2010 objective. In Missouri, the asthma hospitalization rates for children under age five and adults 65 and older are below the national average but above the HP 2010 objective. The hospitalization rate for people 5 to 64 years, however, is above both the national average and the HP 2010 objective.

Other HP 2010 objectives involve days of work missed, days of school missed, and activity limitation due to asthma. The MAC seeks to obtain baseline measures for these figures to compare Missouri to national averages and the HP 2010 target objectives.

Table 1: National Baseline (1998, 1995-1997), Missouri 2001, and Healthy People 2010 National Target Objectives for Asthma-related Deaths, Emergency Department Visits, and Inpatient Hospitalizations.

Age Group		National Baseline	Missouri Baseline	Healthy People National Target Objectives
Year		1998	2001	2010
Asthma-related deaths <i>Rate per million</i>	Children under age 5	2.1	*	1.0
	Children aged 5 to 14	3.3	*	1.0
	Adolescents and adults			
	aged 15 to 34 years	5.0	5.4	2.0
	Adults aged 35 to 64 years	17.8	15.7	9.0
	Adults aged 65 years and older	86.3	43.8	60.0
Year		1995-1997	2001	2010
Hospital emergency department visits due to asthma <i>Rate per 10,000</i>	Children under age 5	150.0	153.8	80.0
	Children and adults aged 5-64 years	71.1	53.3	50.0
	Adults aged 65 years and older	29.5	13.7	15.0
Year		1995-1997	2001	2010
Hospitalizations due to Asthma <i>Rate per 10,000</i>	Children under age 5	45.6	38.4	25.0
	Children and adults aged 5-64 years	12.5	12.6	7.7
	Adults aged 65 years and older	17.7	11.1	11.0

* Number of deaths too small for rate calculation

Prevalence: How common is asthma?

Based on 2002 Behavioral Risk Factor Surveillance System (BRFSS) data for Missouri, the lifetime prevalence of asthma among adults 18 years and older is 12.5%, compared to the national prevalence of 11.8%. **Lifetime** prevalence is calculated based on the number of adults who say that a doctor has told them they have asthma. Lifetime prevalence in Missouri appears to be on the rise. In 2000, the adult lifetime asthma prevalence was 10.6%, and in 2001 it was 12.0%, and in 2002 it was 12.5%.

According to the 2002 data for Missouri adults, females (14%) have a higher lifetime prevalence of asthma than males (10.9%). Figure 1 shows lifetime asthma prevalence by age among adults. People 18 to 24 have the highest

Figure 1: **Lifetime** Prevalence by Age Among Adults 18 Years and Older, in Missouri, 2002

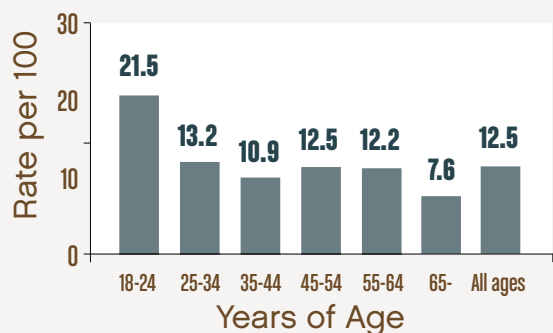
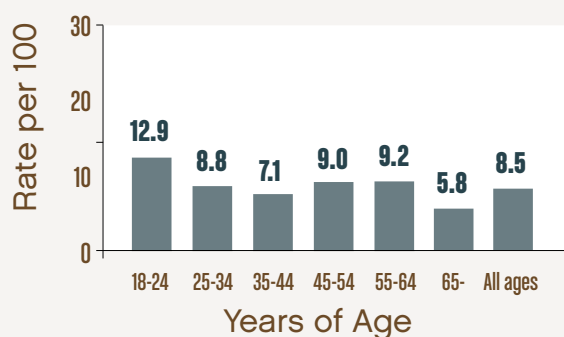


Figure 2: **Current** Prevalence by Age Among Adults 18 Years and Older, in Missouri, 2002



prevalence, at nearly twice the rate of the Missouri average. The lowest prevalence is among adults 65 and older. This rate is almost half of the overall state prevalence.

Current asthma prevalence is determined based on the number of adults who report an asthma diagnosis during their lifetime and who also report that they still have asthma. This information is found in the Missouri 2002 BRFSS. Figure 2 shows the prevalence of current asthma is highest among 18-24 year-olds, and is lowest for those 65 years and older.

Figure 3 shows lifetime asthma prevalence by race and ethnicity, and Figure 4 shows current asthma prevalence by race and ethnicity. Lifetime prevalence among whites is lower than the Missouri average. African Americans have higher rates than whites. Prevalence among African Americans and all other racial/ethnic groups is higher than the state average and higher than rates for whites¹.

Figure 3: **Lifetime** Asthma Prevalence by Race and Ethnicity Among Adults 18 Years and Older, Missouri, 2002

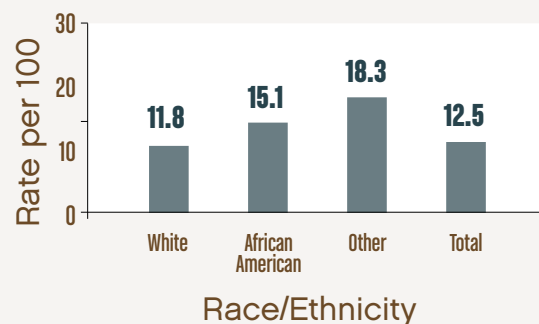


Figure 4: **Current** Asthma Prevalence by Race and Ethnicity Among Adults 18 Years and Older, Missouri, 2002



In this state plan, all data are reported for African Americans and whites of non-Hispanic ethnicity. Also, statistics are reported after age-adjustment to the 2000 standard population where appropriate.

Morbidity: How many ED visits and hospitalizations are caused by asthma?

In 2001, 30,777 ED visits (5.6 per 1,000 people) were reported with asthma as the primary cause. The average rate from 1993 to 2000 was only 5.2 per 1,000 people; this was fairly consistent across the years observed.

Figure 5 shows that when ED rates are stratified by age, the highest rates are for children. This rate is especially high for children in their first year of life and from 1 to 4 years of age. From ages 1-4, males visit the ED more than females; however, females aged 15 and older visit the ED more often than males. The overall rate shows that more females than males visit the ED due to asthma. Figure 6 shows that African Americans (18.6 per 1,000 people) were more than 5 times as likely to visit the ED as whites (3.6 per 1,000 people) in 2001. These differences remained after stratification by age.

Figure 5: Emergency Department (ED) Visits Due to Asthma by Age and Sex, Missouri 2001

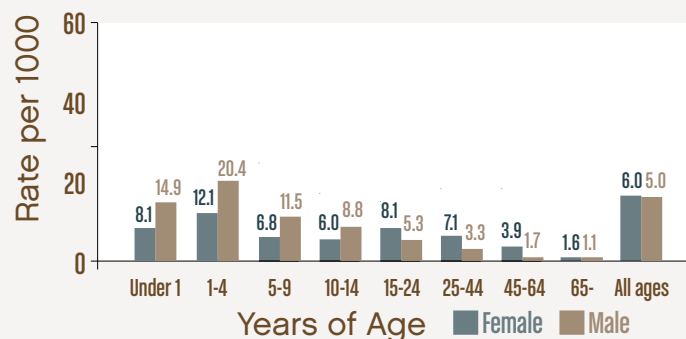
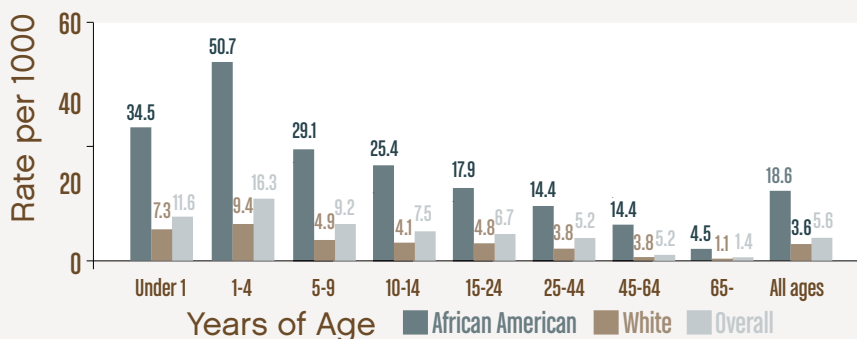


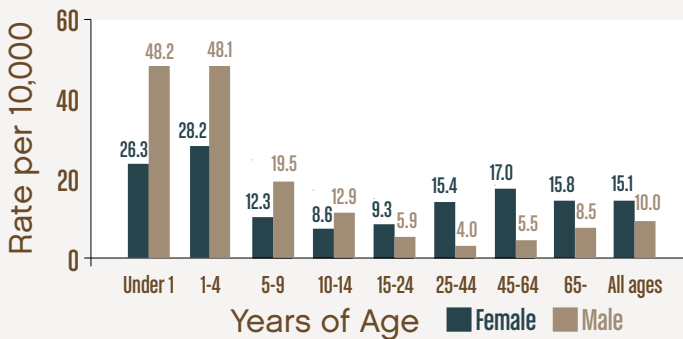
Figure 6: Asthma-Related ED Visits by Age and Race, Missouri 2001



There were 7,106 inpatient hospitalizations in 2001 (12.7 per 10,000 people) due to asthma. The average rate from 1993 to 2000 was 13.1 per 1,000 people, which was lower than the 2001 rate, however, there was great variation among the years observed. Figure 7 shows that this rate is highest for children 14 years and younger, with the highest rates for children 1 to 4 years of age and in their first year of life. Asthma is the third leading cause of hospitalization in children under 15. Overall, more females were hospitalized than males; however, more males under 15 years were hospitalized than females. African Americans were 3.8 times more likely to be hospitalized due to asthma complications, and Figure 8 shows that rates for African Americans are higher in every age category.



Figure 7: Asthma-Related Inpatient Hospitalizations by Age and Sex, Missouri 2001



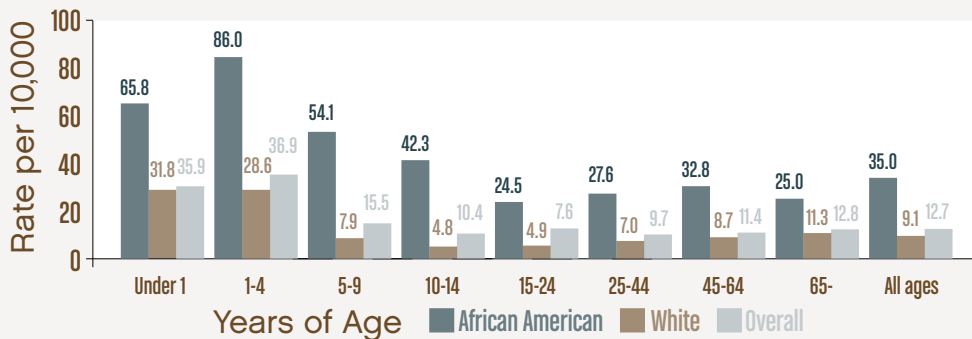
Mortality: How many people die from asthma?

Based on Missouri death certificate data provided by the Center for Health Information Management and Evaluation (CHIME), 86 people died of asthma in 2002. This is a mortality rate of 1.5 per 100,000 people. The mortality rates were slightly lower in 2000 and 2001, at 1.4 per 100,000 people. The 2002 mortality rate was highest among individuals 65 years and older at 5.2 per 100,000

people. Males and females had similar rates, at 1.4 and 1.3 per 100,000 people, respectively. African Americans (3.8 per 100,000 people) were 3.2 times more likely to die of asthma than whites (1.2 per 100,000 people)².

A more detailed description of the impact of asthma in Missouri can be found in the Missouri Asthma Burden Report. Please contact the Missouri Department

Figure 8: Asthma-Related Inpatient Hospitalizations by Age and Race, Missouri 2001



of Health and Senior Services (MDHSS) at 1-800-316-0935 or www.dhss.mo.gov/asthma for a copy of the report.

General Facts About Asthma

Asthma is an inflammatory disease of the airways

Asthma is a chronic disease

There is no cure – control and treatment are essential for successfully living with asthma

Common symptoms:

Wheezing

Breathlessness

Chest tightness

Nighttime or early morning coughing



Asthma Disparities in Missouri

Although the reasons are unclear, disparities exist between African Americans and whites in ED visits and hospitalizations due to asthma⁸. Factors may include a lack of access to health care services, the quality of health care received, lack of opportunities for asthma self-management education, and a range of environmental health issues.

Fifty-four percent (54%) of Missouri's African American population resides in St. Louis City, Kansas City, and the 10-county region in southeast Missouri known as the Bootheel⁹. The disparities that exist across Missouri are

particularly evident in these three areas.

African Americans make up 11.1% of the state's total population, but account for 39.7% of the ED visits and 33.9% of the hospitalizations for the state. It is expected that African Americans make up about 11% of ED visits and hospitalizations, based on their proportion of the population. However, Table 2 shows that the observed ED and hospitalization rates are exceeded by more than three times the expected rate. This demonstrates an increased burden of asthma among African Americans in Missouri. These findings are paralleled in St. Louis City, Kansas City, and the Bootheel.

It is worthwhile to note that Missouri's two largest metropolitan areas, where many African Americans reside, were ranked in the top ten of America's 100 "asthma capitals" for 2004. The American Academy of Allergy, Asthma, and Immunology and the Asthma and Allergy Foundation of America ranked the 100 largest metropolitan areas in the nation by asthma severity based on prevalence, risk factors, and medical factors. St. Louis was ranked number 3 and Kansas City was number 8¹⁰.

ST. LOUIS CITY

Most African Americans in Missouri live in St. Louis City. Based on the 2000 census, African Americans make up 11.1% of Missouri's total population. St. Louis City is 51% African American, and 28.5% of Missouri's total African American population.

In 2001 in St. Louis City there were 4,692 ED visits due to asthma, with 3,924 of these among African Americans. Table 2 shows that African Americans make up 51% of the city's population, but account for 83.6% of the ED visits. African Americans in St. Louis City are over 1.6 times more likely than whites or other racial/ethnic groups to go to the ED with asthma complications.

This trend can also be seen for inpatient hospitalizations. In 2001 in St. Louis City, there were 1,002 hospitalizations due to asthma complications, with 835 of those among African Americans. This means that



51% of the city's population accounts for 83.3% of the hospitalizations (Table 2). African Americans in St. Louis City are over 1.6 times more likely to be hospitalized with asthma complications as expected based on their proportion of the population.

Table 2: Asthma ED Visits and Hospitalizations by Race and Geographic Area, Missouri 2001

	African American Population	ED Visits Among African Americans	Hospitalization Among African Americans
St. Louis City	51.0%	83.6%	83.3%
Kansas City	31.2%	68.2%	60.9%
Bootheel Region	9.0%	31.9%	26.8%
Overall	54.0%	71.5%	63.6%
Missouri	11.1%	39.7%	33.9%

KANSAS CITY

According to the 2000 census, Kansas City is 31.2% African American, and accounts for 22.0% of the state's total African American population. In 2001, 3,052 out of 4,476 ED visits due to asthma in Kansas City were among African Americans. Table 2 shows that African Americans in Kansas City were 2.2 times more likely than expected to visit the ED due to asthma. This trend was also observed with inpatient hospitalizations, at twice the expected rate; 561 out of 922 total asthma hospitalizations were among African Americans.

THE BOOTHEEL

The Bootheel region of Missouri is located in the southeast corner of the state. Ten Missouri counties are included in this area: Carter, Ripley, Butler, Wayne, Stoddard, Scott, Mississippi, New Madrid, Pemiscot, and Dunklin. According to the 2000 census, about 9% of the Bootheel is African American; however, great variation can be seen within the region. For example, Ripley County has the lowest number of African Americans (6 per 13,483 people) at less than 0.005%, while Pemiscot County has the highest number in the region (5,259 per 20,129 people), at 26%.

In the Bootheel, 31.9% of the 1061 ED visits reported in 2001 were among African Americans, who make up only 9% of the region's population (Table 2). This is a rate nearly four times greater than expected based on the proportion of African Americans living in the Bootheel. The three Bootheel counties with the highest number of African Americans also have the highest ED rates. Pemiscot County is 26% African American, and the ED rate among African Americans is 67.2%. This proportion is nearly three times greater than expected. Mississippi County is 20.5% African American, but accounts for 36.4% of ED visits. This rate is nearly twice as great as expected. New Madrid County is 15.3% African American, and has an ED rate of 42.7%. This rate is nearly three times greater than expected.

Detailed county-level inpatient hospitalization rates are not available for 2001 because of small sample size and possible confidentiality issues. As a whole, however, the region is 9% African American, who account for 26.8% of the inpatient hospitalizations. This is comparable to the proportion observed for the total Missouri population, about three times greater than expected⁹.

Surveillance and Evaluation

The information on racial disparities in Missouri described above is one example of how surveillance data can be used for program improvement. All surveillance and program data gathered will be analyzed, evaluated, and used to shape policy and asthma management strategies in the future. This may include finding and closing surveillance gaps, identifying people at risk for poor asthma outcomes, and maintaining or redirecting asthma interventions. The objectives and strategies listed in *Addressing Asthma in Missouri* were developed based on current data and will be adjusted to reflect future findings.

HOW was the Missouri Asthma Coalition (MAC) formed?

In 2000, the Missouri Department of Health and Senior Services (MDHSS) recruited representatives to form the State Asthma Task Force from 1) the divisions of Chronic Disease Prevention and Control, 2) Environmental Health and Communicable Disease Prevention, 3) Maternal, Child and Family Health, and 4) the state medical epidemiologist. During several meetings over the course of a year, the task force assessed the burden of asthma in Missouri and made recommendations for a coordinated public health response. The task force recommended the development of a plan that outlined how to achieve the Healthy People 2010 (HP 2010) objectives.

In October of 2001, the MDHSS received a grant from the Centers for Disease Control and Prevention (CDC) to develop state capacity to address asthma from a public health perspective. The MAC formed to serve as a statewide advisory board to guide the development of an asthma program in Missouri. Its role is to establish leadership, develop consensus on asthma-related issues, and further define roles and responsibilities of people and entities working to reduce the impact of asthma in Missouri.

Representatives from government agencies, hospitals, health organizations, schools, universities, and organizations such as the American Lung Association and Asthma and Allergy Foundation of Missouri have participated in MAC meetings since



Addressing Asthma in Missouri

The MAC is proud to present the state plan *Addressing Asthma in Missouri*. The plan includes all Missourians regardless of sex, age, race/ethnicity, socioeconomic status, or county of residence. Proposed initiatives address all environments that may affect people with asthma including the home, school, workplace, community, and health care settings.

2001. This coordinated alliance was vital for a statewide multidisciplinary response to the issue of asthma in Missouri. The MAC defined the goals, objectives and strategies in this state plan *Addressing Asthma in Missouri*.

The MDHSS formed and staffed the Missouri Asthma Prevention and Control Program (MAPCP) in July 2002 to meet the goals outlined in the CDC grant. These include creating linkages among agencies and organizations, implementing an asthma surveillance system and intervention program, evaluating interventions and associated activities, documenting lessons learned in the process, and developing and approving a comprehensive state asthma plan.

The main goal of the plan is to reduce the impact of asthma in Missouri, through improving quality of life and decreasing direct and indirect economic losses. The MAC recommends the following seven goals that need to be achieved based on the nation's HP 2010 objectives⁷.

- Reduce asthma deaths
- Reduce hospital emergency department (ED) visits
- Reduce hospitalizations
- Reduce the number of school days missed due to asthma
- Reduce the number of work days missed due to asthma
- Reduce activity limitations due to asthma
- Reduce disparities in asthma outcomes for all goals listed above

Table 1 (on page 4) shows how Missouri compares with the national baseline prevalence and HP 2010 objectives. The MAC has developed objectives and strategies to help guide the efforts of all people and entities working independently and collaboratively to reduce the impact of asthma in Missouri. These objectives and strategies are contained within the following categories:

- Community
- Health Care
- Environmental Health and Work-Related Asthma
- Scientific
- Policy

New information obtained through surveillance and evaluation, including feedback from internal and external partners, will be used to assess the effectiveness of the strategies used. It is important to note that this information will also be used to alter strategies and objectives in order to meet the goal of reducing the impact of asthma in Missouri. This new information will help to identify prevalence trends, determine new priority areas and populations, and direct efforts to where they are needed.

MAC and MAPCP Activities

The MAPCP is making progress on some of its objectives:

- The MDHSS includes asthma modules on its statewide Behavioral Risk Factor Surveillance System (BRFSS) surveys, such as questions on childhood and work-related asthma.
- The MAPCP has access to morbidity data from hospitalization and emergency department records.
- Interventions are taking place in Missouri schools, such as an asthma curriculum for kindergarten through grade six and a program to educate school nurses and staff. The MDHSS is addressing asthma in the school setting by giving school nurses information and training to help them manage asthma among students, raise student and school staff awareness of asthma, and inform policy makers about the issues

surrounding asthma in schools. Also, an innovative curriculum to increase asthma awareness among school children and teachers is under development. Coalitions are currently active around the state.

The Future of the MAC and MAPCP

The MAC, as a statewide advisory board, will offer leadership and expertise on a broad range of issues encountered during plan implementation. The MAC will set priorities, create a timeline, coordinate responsibilities, and create criteria for measuring and evaluating strategies used according to conditions encountered in the future. These conditions may include new information gathered from the evaluation of Missouri's asthma program and surveillance efforts, published findings, feedback from partners, relevant outside factors, and lessons learned along the way. The MAC will expand to include new members and subcommittees to improve its ability to address a range of asthma issues. The MAC will continue to support the MAPCP in order to meet the main goal of the state plan: reducing the impact of asthma on quality of life, as well as reducing direct and indirect economic losses.

The MAPCP, as a program within the MDHSS, will assure that the objectives in the policy and surveillance sections are met, although other entities may play a role. MAPCP members will join in activities as appropriate, such as attending CDC meetings and disseminating asthma educational materials. The MAPCP and MAC will jointly develop an asthma resource inventory.

The day after Kevin's emergency room visit he stayed home from school and his mom had to stay home from work, too. When Kevin returned to school, his mom explained what had happened to his teacher. A few days later, Kevin's mom received a call at work from the school nurse. She had just spoken with Kevin's teacher and found out that Kevin was going to see an asthma specialist. Earlier in the school year the nurse had attended a training session sponsored by the Missouri Department of Health and Senior Services about managing asthma

in children. She had some brochures about asthma to share with Kevin's mom, as well as a list of local asthma resources that she developed to help parents of children with asthma. Earlier in the year, members of the Missouri Asthma Coalition from Kevin's county had used the Department of Health and Senior Service's "Priorities MICA" website to guide regional health planning activities. Data from Priorities MICA showed that asthma was a serious health concern in Kevin's county.

Missouri Asthma Coalition, Faith-Based Organizations, Secular Organizations, Childcare Facilities and Schools

Rationale:

Community involvement on many levels can help to reduce the impact of asthma in Missouri, whether through increasing partnerships, access to information and services, and awareness of the importance of the asthma issue. This may occur through involvement with faith-based organizations, secular organizations, childcare facilities, and schools.

- The Missouri Asthma Coalition (MAC) is a multidisciplinary advisory board that has been instrumental in the development and coordination of the asthma program. Maintenance and expansion of existing MAC partnerships will help to link asthma efforts across the state.
- Community organizations and entities that should receive asthma interventions include faith-based organizations, secular organizations, childcare facilities, and entities in the public sector. Raising overall community awareness will encourage leaders to think about potential consequences of policies and regulations for people with asthma, help to link people with asthma and their families to known resources, and promote advocacy for improved asthma care⁴.
- Schools are an important part of each community. They are an appropriate venue for asthma education because asthma is more common in children than adults. In addition, school staff need to be aware of potential asthma management and emergency medical issues students may face. Staff members who should receive training include teachers, coaches, administrators, support staff, food service staff, maintenance staff, and bus drivers¹¹.

Missouri Asthma Coalition

Objective 1: Expand the Missouri Asthma Coalition (MAC) and maintain existing activities.

Strategies:

- Coordinate an annual meeting of the MAC.
- Expand the environmental subcommittee to address work-related asthma.
- Continuously seek new members for the MAC, especially from new sectors.
- Expand or create subgroups to address new issues, if necessary.
- Review the state plan and other information yearly to set new priorities, responsibilities, and directions for addressing asthma.
- Maintain existing activities.

Objective 2: Develop and disseminate the Missouri Asthma Resource Inventory, a tool that will function as an inventory of asthma resources including all services, materials, and programs.

Strategies:

- List asthma resources by category or type (e.g. educational programs, environmental organizations, etc.).
- List asthma resources by geographic area covered (for state-, regional-, and community- level resources).
- Include materials and organizations that are:
 - Approved by the MAPCP, MAC, or both
 - Written in a way that is sensitive to culture and reading level
 - Based on best practices or promising practices
 - Possible to alter for specific target audiences and settings in Missouri
 - Useful for target audiences such as community organizations, schools, health care providers, employers, policymakers, and people with asthma and their families

Community-Level Organizations

Objective 3: Increase the number and effectiveness of partnerships with representatives of faith-based organizations, secular organizations, childcare facilities, and entities in the public sector to coordinate and maximize resources through reducing duplication of efforts.

Strategies:

- Strengthen and expand asthma efforts through partnerships by:
 - Listing current partnerships
 - Enhancing existing partnerships
 - Forming new partnerships
 - Listing all available partners in a resource inventory
 - Getting feedback on state plan content from new and current partners
- Promote the development of community asthma coalitions by:
 - Giving technical assistance and training
 - Giving financial support (when feasible)
 - Promoting partnerships among key people
- Support community organizations in efforts to communicate and meet regularly to share best practices, resources, and concerns.
- Include partners in Missouri Asthma Resource Inventory.
- Enable access to Missouri Asthma Resource Inventory.



Objective 4: Increase the number of asthma interventions directed toward targeted populations using partnerships with faith-based organizations, secular organizations, childcare facilities, and entities in the public sector.

Strategies:

- Determine appropriate target audiences and settings for implementation.
- Refer organizations and people to the Missouri Asthma Resource Inventory.
- Provide educational materials and training on asthma-related issues to appropriate organizations and people.
- Provide follow-up education when feasible.
- Develop or support the development of an evaluation plan for asthma interventions directed toward community organizations.

Schools

Objective 5: Establish management and support systems for asthma-friendly schools.

Strategies:

- Provide leadership to assist schools or school districts to identify their asthma needs, resources, and potential barriers, and to assign a person to coordinate asthma activities.
- Provide technical assistance to help develop and implement written policies and procedures regarding asthma education and management that are sensitive to culture, reading level, and current medical practices.
- Promote the use or adaptation of school records that identify all students with asthma and asthma-related absenteeism.
- Promote administrative, local school board, and community support for schools and school districts that address asthma with a coordinated program, including asthma education.
- Promote ongoing communication among students, parents, teachers, school nurses, health care providers, and others to ensure proper disease management for students with asthma.
- Develop or support the development of an evaluation plan for asthma initiatives aimed at schools in Missouri.
- Obtain feedback on state plan content from representatives of schools and school boards.

Objective 6: Provide appropriate school health services for students with asthma.

Strategies:

- Provide support to schools that seek to persuade parents of all students with asthma to provide an individual asthma action plan created by a primary care provider and encourage parents to share the asthma action plan with faculty and staff according to applicable privacy policies and regulations.

- Provide support to schools that seek to ensure that students have fast access to prescribed medications as approved by physicians and parents; the ability to self-carry and self-administer should be determined according to policies and regulations, school officials, physicians, and parents.
- Provide support to schools that seek to develop an appropriate written action plan detailing emergency protocols for students in respiratory distress, or support the application of a general emergency protocol for medical emergencies that is appropriate for a respiratory distress event.
- Promote the ability of each school to have access to a full-time school nurse.
- Provide support to schools that seek to refer students with asthma who do not have a primary care provider to child health insurance programs and providers.
- Provide support to schools that seek to provide or coordinate with community services to provide counseling and social services as appropriate.
- Provide information for schools in the Missouri Asthma Resource Inventory.

Objective 7: Provide asthma education and awareness programs for students and school staff.

Strategies:

- Provide materials, technical assistance, and support to schools to ensure that students with asthma and their parents, school board members, and school staff receive education on asthma basics, asthma management, and emergency response.
- Promote the integration of asthma awareness and lung health lessons into health education curricula.
- Provide support for schools that promote smoking prevention and cessation programs for students and staff.



When Kevin and his parents met with the asthma specialist, she reviewed his medical history and tested how well his lungs functioned. She diagnosed Kevin with asthma. She explained that the best way to treat asthma was to manage it on a daily basis, instead of waiting until Kevin had breathing problems. The specialist prescribed daily medication for Kevin in addition to an inhaler that could be used as needed. She gave Kevin and his parents a written asthma action plan that could be used at home and at school so that everyone knew what steps needed to be taken to manage his asthma. Perhaps most important, the asthma specialist gave Kevin's parents the name of a

pediatrician that accepted Medicaid whose office was only 20 minutes away from their home.

When Kevin had his first appointment with the new pediatrician, the doctor reviewed Kevin's asthma action plan. He spent a long time talking with Kevin and his parents about how to manage Kevin's asthma. He even told them about a free class for kids with asthma offered at the local hospital. There, Kevin could meet other kids with asthma, learn how to recognize his asthma triggers, and have his questions about asthma answered even when he didn't have a doctor's appointment.

Health Care, Clinical Care, Access, Vaccinations and Self-Management

Rationale:

Several health care-related factors are important for controlling asthma. These factors include receiving clinical care according to known guidelines, having access to quality medical care, receiving recommended vaccinations, and developing asthma self-management skills.

- **Clinical Care**- Primary care providers, emergency department and hospital staff, and specialists who treat people with asthma are an important target audience for asthma awareness and education. Health care providers are in contact with asthma patients during acute events as well as during regular office visits. With increased awareness and skills they can accurately diagnose, treat, and medicate to improve patient outcomes¹².
- **Access to Care**- Access to care is a barrier that needs to be addressed to improve asthma outcomes statewide. Asthma management received through primary care visits can help to prevent adverse outcomes such as ED visits, hospitalizations, and death.
- **Vaccinations**- People with asthma need to be vaccinated for influenza¹³ and other respiratory diseases when possible, according to recommendations established for all people who have a chronic disease.
- **Self-management**- There is a wealth of evidence showing that successful asthma control depends on patient self-management skills. Patients and their families must talk with their health care providers to obtain needed information on medications and other therapies, and must comply with these instructions. They must also avoid settings and behaviors that induce asthma symptoms and trigger acute events^{3, 4, 12}.

An evaluation plan will be developed for all interventions to determine their effectiveness in meeting goals and objectives and for future improvement of strategies implemented. Two-way communication between the entities implementing and the people receiving interventions will also help to determine the effectiveness and usefulness of activities. The process for getting this information will be built into each evaluation plan.

Clinical Care

Objective 8: Increase the proportion of persons with asthma who receive diagnoses and care according to guidelines released by the National Heart, Lung, and Blood Institute's National Asthma Education and Prevention Program (NAEPP).

Strategies:

- Improve health care provider access to the NAEPP guidelines:
 - Provide access to the NAEPP guidelines on the MDHSS website
 - Send out a notice to all relevant health care personnel stating the NAEPP document can be found on the MDHSS website
- Promote the strategies in the NAEPP guidelines, including:
 - A written asthma management plan supplied by a health care provider
 - Instruction on proper use of inhalers, if prescribed
 - Education on early signs and symptoms of asthma events or episodes and how to respond appropriately
 - Prevention medications
 - Long-term follow-up care after any asthma hospitalization
 - Environmental risk factor assessment assistance

Objective 9: Increase the proportion of health care providers who receive quality education on asthma care and control, patient education, and general asthma awareness.

Strategies:

- In collaboration with professional organizations, disseminate educational materials for health care providers that include the most recent findings regarding best practices, promising practices, and new treatment options.

- Partner with professional organizations and other groups to create opportunities for asthma diagnosis and treatment educational programs for continuing education credit such as:
 - Web-based programs
 - Care and management conferences
- Support the formal education and national certification of asthma educators to ensure they meet minimum qualifications.
- Develop or support the development of an evaluation plan for interventions and educational programs directed toward health care providers.
- Seek to obtain feedback from health care providers on the usefulness of these activities.

Access to Care

Objective 10: Improve access to quality medical care for persons with asthma who are insured or underinsured by collaborating with health systems.

Strategies:

- Create partnerships with representatives of the health systems industry.
- Compile a list of asthma-related products and services covered by each health system.
- Advocate for improving coverage of individuals with asthma who are underinsured.
- Promote coverage of smoking cessation programs.
- Promote asthma management programs for patients.
- Enable access to the Missouri Asthma Resource Inventory, which may contain links to needed services.

Objective 11: Improve access to quality medical care for persons with asthma who are not insured.

Strategies:

- The MAC will advocate for increased access to health care for persons who lack health insurance or who are at risk of decreased access to medical care.
- Promote mechanisms to provide medications, education, and services to persons not covered by health plans.
- Promote the Missouri Asthma Resource Inventory, which may contain links to sources for needed services.

Objective 12: Increase the proportion of persons with asthma who have access to appropriate level of care.

Strategies:

- Create and promote linkages between primary care providers and acute care providers.
- Create linkages between asthma specialists and other health care providers.
- Use partnerships to provide information to persons with asthma and their families on providers and clinics located in each community.
- Raise awareness of asthma treatment options and self-management programs for people with asthma and their families.
- Work with internal and external partners to ensure that people in medically underserved areas have access to an appropriate level of care.
- Promote the Missouri Asthma Resource Inventory, which may contain links to sources for needed services.

Vaccinations

Objective 13: Increase the proportion of persons with asthma who receive vaccinations for influenza and other infectious respiratory diseases at intervals recommended for individuals with chronic disease.

Strategies:

- Develop or disseminate an educational intervention on vaccinations for people with asthma.
- Collaborate with other entities that promote vaccinations for people with a chronic disease.
- Develop or encourage the development of an evaluation plan for initiatives seeking to increase vaccination rates for people with asthma.

Asthma Self-Management Skills

Objective 14: Increase the proportion of people with asthma and their families who receive formal education and support as an essential part of managing their asthma.

Strategies:

- Promote access to programs, materials, and information that persons with asthma and their families need to successfully live with asthma, including the Missouri Asthma Resource Inventory.
- Promote linkages between needed community resources and people with asthma and their families.
- Promote two-way communication between people with asthma and their families and their health care providers, public health practitioners, and others who provide asthma education, support, and services.
- Provide priority populations, identified through analysis of morbidity and mortality data, with educational materials that are sensitive to culture and that highlight key issues for each population.

- Provide initial and ongoing educational materials, training, and support to people with asthma and their families in order to help them manage asthma.
- Develop or support the development of an evaluation plan for initiatives seeking to improve self-management skills of people with asthma and their families.
- Obtain feedback from people with asthma and their families on the usefulness of these activities, needs, and priorities.

Objective 15: Increase the proportion of people with asthma and their families who follow health care provider instructions and other recommendations regarding treatment, environment, and behavior.

Strategies:

- Raise awareness about the role of self-management in the prevention of asthma morbidity and mortality.
- Promote the involvement of patients, families, and primary care providers in the development of detailed individualized asthma management plans that contain information on medication schedules, follow-up visits, and environments and behaviors that should be avoided.
- Develop or support the development of an evaluation plan for initiatives seeking to improve compliance with health care provider instructions by people with asthma and their families.
- Obtain feedback from people with asthma and their families on the usefulness of these activities, needs, and priorities.



Kevin's dad started smoking as a teenager and has smoked a pack a day ever since. Every once in a while he tried to quit and even quit for several months, one time, but he always started smoking again when something stressful happened. When Kevin's father learned that cigarette smoke could be an asthma trigger, he felt awful. He vowed to

quit smoking for Kevin's sake. Although it's hard to quit, he's making progress. He no longer smokes inside the house or car and has cut the number of cigarettes he smokes each day in half. He thinks that he'll be ready to quit for good in another month or so.

Environmental Health and Work-Related Asthma

Rationale:

Irritants and allergens in the environment often trigger asthma events and hinder asthma management. Exposure to these agents may occur indoors (home, school, community) or outdoors (pollutants, pollen). Additional exposures often arise in the workplace, which may occur in both indoor and outdoor environments. Some workplace exposures induce work-related asthma or trigger events in persons with asthma. Environmental and workplace factors that are a significant threat in Missouri will be identified to more effectively direct control efforts. Eliminating or minimizing exposure to these triggers can reduce asthma morbidity and mortality^{3, 4, 12}. An evaluation plan for initiatives will be implemented whenever feasible to determine their effectiveness in meeting goals and objectives outlined in the state plan. Feedback on the usefulness and effectiveness of these activities will be collected, as outlined in each evaluation plan.

Objective 16: Reduce exposure to environmental irritants and allergens that trigger asthma events in indoor environments.

Strategies:

- Identify environmental factors that contribute to asthma risk within indoor environments.
- Include information on indoor air issues in the Missouri Asthma Resource Inventory.
- Disseminate educational materials or training on indoor air contaminants and allergens along with tips on how to avoid triggers in the home, schools, and community at-large.
- Collaborate with the Missouri Tobacco Use Prevention Program to reduce exposure to environmental tobacco smoke.
- Collaborate with Department of Elementary and Secondary Education, local housing authorities, local building departments, and other entities to obtain information on asthma triggers in Missouri and to reduce exposure to environmental irritants and allergens.
- Develop or encourage the development of an evaluation plan for initiatives seeking to reduce exposure to environmental irritants in indoor environments.
- Obtain feedback on the usefulness of these activities and future needs from recipients.

Objective 17: Reduce exposure to environmental irritants in outdoor environments.

Strategies:

- Identify environmental factors that contribute to risk of asthma illness within outdoor environments.
- Include information on outdoor air issues in the Missouri Asthma Resource Inventory.
- Provide education on outdoor air contaminants along with tips on how communities can reduce air pollution.
- Provide education on how to avoid exposure to irritants and allergens of natural origin, like pollen.
- Collaborate with Missouri Department of Natural Resources, Missouri Department of Transportation, the Environmental Protection Agency, and other agencies to obtain information on asthma triggers in Missouri and reduce exposure to environmental irritants and allergens in outdoor environments.
- Develop or support the development of an evaluation plan for initiatives seeking to reduce exposure to environmental irritants in outdoor environments.
- Obtain feedback on the usefulness of these activities and future needs from recipients.

Objective 18: Reduce exposure to irritants to reduce impact of asthma in the work place.

Strategies:

- Identify environmental factors that contribute to risk of asthma illness at work sites in Missouri.
- Collaborate with the Missouri Tobacco Use Prevention Program to reduce exposure to environmental tobacco smoke in the work place.
- Collaborate with the Occupational Health and Safety Administration, divisions within the MDHSS, and other state and federal agencies to obtain information on asthma triggers in Missouri and reduce exposure to environmental irritants and allergens in the work place.
- Include information on work-related asthma in the Missouri Asthma Resource Inventory.
- Develop and disseminate educational programs and materials for employers including:
 - Emergency asthma care plans
 - Reduction of worker exposure to irritants and allergens produced in the work place
- Develop or support the development of an evaluation plan for initiatives seeking to reduce exposure to environmental irritants in the work place.
- Obtain feedback on the usefulness of these activities and future needs from recipients.

**This facility is
smoke free.**



John is a statistics expert at the County Health Department. He's never met Kevin or his family but he knows all about the impact of asthma on people's lives. Part of his job is to track any increase in emergency department visits due to certain diseases or conditions, including asthma. For the past few years he has seen an increase

in emergency department visits due to asthma, especially by children. He shared this information with colleagues at the Missouri Department of Health and Senior Services, who were able to recommend programs that had been researched and found to be effective in addressing the needs of children with asthma.

Surveillance, Analysis, Evaluation and Dissemination

Rationale:

Surveillance, analysis, evaluation, and dissemination are critical to public health practice:

- **Surveillance-** The program will continue to track morbidity and mortality in Missouri, including information on prevalence of childhood and work-related asthma. Many sources of asthma-related data are available and actively used in Missouri. Asthma questions have been included in the Behavioral Risk Factor Surveillance System (BRFSS) surveys conducted in Missouri for several years. The BRFSS survey is a random telephone survey of adults 18 years or older, and is conducted every year. The survey collects information on the health status and lifestyle of Missouri residents to monitor and identify factors that may affect the people's risk for a variety of diseases, including asthma. Through its Missouri Information for Community Assessment (MICA) system, the Center for Health Information Management and Evaluation (CHIME) provides data on ED visits, hospitalizations, health care costs, and mortality. These data are available for each age, sex, and race/ethnic group.
- **Analysis-** The Missouri Asthma Prevention and Control Program (MAPCP) is exploring several new sources of data. Surveillance data can be analyzed for assessment and policy development. For example, data can be used to examine trends in prevalence and reveal priority areas for intervention, such as identifying populations at risk for poorly controlled asthma. Indirect and direct costs can be analyzed in order to describe the economic burden of asthma in Missouri. These data can also be used to enhance surveillance activities, evaluate intervention and program effectiveness, and to determine whether the state plan's goals are being met.
- **Evaluation-** The development of an evaluation plan for asthma initiatives and interventions conducted will help to determine whether strategies are effective in meeting program goals and objectives, and how to improve the program in the future. It is a Missouri Asthma Coalition (MAC) priority to receive feedback on asthma issues and activities from community groups and schools to ensure that efforts are effective and directed where needs exist. Mechanisms for receiving feedback from internal and external partners will be built into the evaluation plan.
- **Dissemination-** The lessons learned along the way, published literature, and feedback from internal and external partners will be collected and maintained in a database for program development and improvement. These processes will help to allow the plan and the program to evolve over time in order to more effectively address asthma in Missouri. Relevant findings, fact sheets, and other publications will be released to stakeholders and citizens as outlined in the communication plan section of this document. This communication plan will provide a reliable system for statewide dissemination of asthma information to involved people and entities.

Data – a collection of facts and figures from which statistics and conclusions may be drawn through analysis and evaluation

Surveillance – the systematic collection of health-related data

Analysis – the process of using data to answer questions about health-related issues (examining components, describing similarities and differences, recognizing patterns)

Evaluation – interpreting the results found during analysis

Dissemination – the process of communicating information to the public and others

Priority MICA and Interventions MICA

- Support development of and promote the use of the Priority MICA database for data on priority health needs of Missouri communities.
- Support development of and promote the use of the Interventions MICA for information on potentially effective community interventions that address asthma and related issues.

Medicaid and MC+ data

- Increase access to asthma-related information contained in Medicaid records.
- Increase access to asthma-related information contained in MC+ records.

State asthma registry

- Explore the feasibility of developing a statewide asthma registry.
- Explore partnerships with other entities that may help to develop an asthma registry.

Surveillance

Objective 19: Increase the number of surveillance systems with an asthma component while maintaining on-going data collection activities.

Strategies:

Behavioral Risk Factor Surveillance System (BRFSS)

- Include 11 questions from the BRFSS asthma module obtained from the CDC, including nine adult and two child questions, every two years.
- Increase the amount of regional data collected within the smallest statistically valid geographic areas in Missouri.

Asthma morbidity and mortality data

- Maintain access to MDHSS data on asthma-related hospital admissions, ED visits, and mortality.
- Increase detail of morbidity and mortality data collected to include sampling at the smallest statistically valid geographic area.
- Explore the use of codes based on the International Classification of Diseases to enhance asthma morbidity and mortality data collected.

Additional data sources

- Explore new data sources and systems for improving access to asthma data through partnerships with entities that collect asthma-related data and/or who provide asthma-related services.
 - Monitor the Youth Tobacco Survey every two years
 - Monitor the Youth Risk Factor Survey data every two years
 - Monitor Women, Infants and Children (WIC) Program data every two years
 - Monitor Pregnancy Risk Assessment Monitoring System data every two years
 - Explore sources for environmental health and work-related asthma data, including indoor and outdoor air quality issues
 - Explore sources of data on access to asthma care, meeting National Asthma Education and Prevention Program guidelines
 - Explore strategies to track days of school missed due to asthma
 - Explore strategies to track days of work missed due to asthma ▶

SCIENTIFIC OBJECTIVES

- Explore strategies to track activity limitations due to asthma
- Explore strategies to determine the proportion of adults and children who receive formal asthma self-management education from health care providers or other sources
- Explore strategies to measure asthma prevalence in children and average age at onset
- Direct program and interventions toward priority populations and geographic areas identified during analysis.

Objective 22: Increase data analysis to evaluate intervention effectiveness and to determine whether overall and component goals of the state plan are being met.

Analysis and Evaluation

Objective 20: Increase the amount of data analyzed.

Strategies:

- Analyze available data annually.
- Monitor trends in priority populations.
- Monitor trends in co-morbidities and identify new risk factors.
- Monitor data for gaps in surveillance.
- Analyze data within the smallest statistically valid geographic area possible.
- Use data to estimate direct and indirect costs of asthma morbidity and mortality in Missouri.

Objective 21: Increase utilization of surveillance data for program and intervention development and implementation.

Strategies:

- Direct surveillance efforts toward gaps identified in analysis.
- Use appropriate findings for program planning and intervention selection.
- Develop or support the development of an evaluation plan for asthma initiatives and interventions conducted in Missouri in order to determine whether strategies are effective and useful for recipients, including the collection of feedback from internal and external partners.

Strategies:

- Evaluate overall program effectiveness in reducing the impact of asthma in Missouri.
- Evaluate whether each component goal is being met.
- Use these data to evaluate effectiveness of asthma interventions implemented by the MAPCP, the MAC, and partners.
- Improve, maintain, or redirect intervention and program strategies in response to these data.
- Document lessons learned in these endeavors.

Dissemination

Objective 23: Increase the amount of scientific literature and other published findings that are reviewed in order to determine their usefulness in improving asthma initiatives developed in Missouri.

Strategies:

- Review published asthma findings annually.
- Create and maintain a database of these findings.
- Communicate relevant information to stakeholders.

Objective 24: Establish a system for dissemination of asthma information statewide. Materials will be distributed to stakeholders, health departments, citizens, and other individuals and entities as appropriate.

Strategies:

- Develop and implement an overall communication plan.
- Release a revised Missouri Asthma Resource Inventory at least every two years.
- Release a revised asthma fact sheet at least every two years.
- Release a burden report at least every two years.
- Ensure materials for specific audiences are sensitive to culture and reading level.
- Provide information for the smallest geographic areas possible.
- Include public service announcements on television, radio, billboards, and print media.
- Maintain the MAPCP page on the MDHSS web site including:
 - Links to other websites with approved asthma information
 - Information for specific audiences
 - Missouri Asthma Resource Inventory
 - A calendar and bulletin board highlighting state asthma events
- Integrate asthma-related messages into publications released by community-level organizations, professional organizations, and other state programs.
- Encourage communication among people and entities that are addressing asthma and receiving asthma-related services in Missouri.

John also took the information he collected about the increasing problem of childhood asthma in his county to the local school board. In addition to raising awareness about asthma in general,

he recommended that all schools in the county strengthen their asthma policies to better meet the needs of their students.

Policy Objectives

Rationale:

Policymakers are in a position to have a significant influence on asthma morbidity and mortality⁵. They can consider consequences of policies and regulations for people with asthma if they know about the asthma problem and potential solutions. These policies and regulations may be related to air quality, schools, work place safety, pharmaceuticals, and the health care industry. Policymakers include members of the Missouri and United States Congress, heads of state and federal agencies, people working within the Missouri Department of Health and Senior Services (MDHSS,) county commissioners, city administrators, mayors, state and local school board members, and other state and local leaders. An evaluation plan for initiatives directed toward raising policymaker awareness will help to determine their effectiveness. Two-way communication between policymakers and the MAC on asthma-related issues will be a priority. The process for getting feedback will be built into each evaluation plan. The Missouri Asthma Coalition (MAC) will maintain a database of state and federal regulations that affect people with asthma.

Objective 25: Increase policymaker awareness of asthma-related issues.

Strategies:

- Invite policymakers – including local officials, state officials, legislators, and other individuals – to an asthma summit at least once.
- Disseminate the Asthma Burden Report, Asthma State Plan, and an asthma fact sheet to policymakers.
- Provide information for the smallest geographic area possible (e.g. legislative district).
- Notify policymakers about the the MDHSS website and other asthma resources.
- Partner with the Missouri Tobacco Use Prevention Program to increase policymaker awareness of the need for non-smoking policies in public buildings.
- Support a dialog between policymakers, the MAC, the MAPCP, and other entities on asthma-related issues.
- Advocate for asthma priorities when appropriate.

Objective 26: Increase the number of federal, state, and local policies and regulations that are reviewed in order to determine their impact on persons with asthma.

Strategies:

- Review state and federal policies and legislation yearly.
- Review state school board policies yearly.
- Create and maintain a database of these policies and regulations.



One year later... Kevin's parents, doctor, and school nurse have agreed on an asthma action plan that helps to manage his asthma at home and at school. Kevin visits his doctor regularly and has only visited the emergency department once since he started

his asthma action plan. As a result of new school board policies, Kevin is allowed to carry his inhaler all day long so that he can prevent an asthma attack while in school or on the bus.

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